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Report of the Commissioner of the Environment and Sustainable Development

CHAPTER 2

Financial Assurances for Environmental Risks



Office of the Auditor General of Canada

Office of the Auditor General of Canada

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CHAPTER 2

Financial Assurances for Environmental Risks

Performance audit reports

This report presents the results of a performance audit conducted by the Office of the Auditor General of Canada under the authority of the *Auditor General Act*.

A performance audit is an independent, objective, and systematic assessment of how well government is managing its activities, responsibilities, and resources. Audit topics are selected based on their significance. While the Office may comment on policy implementation in a performance audit, it does not comment on the merits of a policy.

Performance audits are planned, performed, and reported in accordance with professional auditing standards and Office policies. They are conducted by qualified auditors who

- establish audit objectives and criteria for the assessment of performance,
- gather the evidence necessary to assess performance against the criteria,
- report both positive and negative findings,
- conclude against the established audit objectives, and
- make recommendations for improvement when there are significant differences between criteria and assessed performance.

Performance audits contribute to a public service that is ethical and effective and a government that is accountable to Parliament and Canadians.

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Financial Assurances for Environmental Risks

Main Points

What we examined

Environmental financial assurances are an important mechanism the federal government uses to help shield taxpayers from the costs of environmental protection, cleanup, and reclamation for a range of natural resource development projects of the private and public sector, including mining, energy projects, the transport of oil and gas, and nuclear. Absolute liability limits are used in certain sectors to limit or cap the total amount that an operator may be liable for if an incident occurs, without proof of fault. Such absolute liability caps are used in Canada and in other countries.

Assurances can be in the form of letters of credit, trust funds, guarantees, and insurance. The federal government holds or has access to these assurances during the lifetime of a project.

The responsibility for natural resource development rests primarily with the provinces. However, there are several specific and well-defined federal regulatory responsibilities covering natural resource development, energy production, and transportation.

We examined whether selected federal entities have appropriate systems in place for obtaining and managing environmental financial assurances. Our audit focused on federal regulation of four sectors: mining (north of the 60th parallel), nuclear, offshore oil and gas, and marine transportation. We also examined liability limits established for nuclear facilities and oil spills from ships, as well as the liability regime for offshore oil and gas production, which includes both an absolute liability limit and an unlimited liability for parties at fault.

Audit work for this chapter was completed on 31 August 2012. More details on the conduct of the audit are in **About the Audit** at the end of this chapter.

Why it's important

The environmental costs resulting from natural resource development projects can run into tens of millions—or in rare cases billions of dollars. Environmental financial assurances are an important safeguard, since they provide funds for future environmental liabilities to be paid for by a proponent or operator. They provide for liabilities arising from projects with long lifespans where risks associated with decommissioning and their related costs may not become known for decades. In conjunction with a regulatory framework, they can act as a powerful incentive to industry to reduce environmental impacts as a core part of business.

Environmental financial assurances are a tangible example of the “polluter-pays principle” in action, since the project proponent or operator is expected at the outset to cover all costs associated with environmental protection, site reclamation, longer-term protection of closed sites, and damages from accidents.

What we found

- Federal entities we examined have procedures in place for obtaining environmental financial assurances. Based on available information, we estimate that the assurances they have received give them access to approximately \$11.6 billion.
- Federal entities lack information to know if the assurances received are sufficient to cover the financial risks of projects, such as the cost of decommissioning and reclamation. We noted that Aboriginal Affairs and Northern Development Canada did not compare, on a regular basis, whether the financial securities obtained during the life of a mine are sufficient to meet the cost of reclamation of land and water. Fisheries and Oceans Canada was not able to confirm the total dollar value of the securities it held, whether the securities were still valid, or if they fully covered the estimated cost of fish habitat compensation plans.
- In two of the examined sectors—nuclear and offshore oil and gas—liability limits for damages to third parties are outdated and generally much lower than those in other countries. Liability limits for damages to third parties from nuclear facilities have not changed in 35 years. Similarly, the offshore oil and gas liability limits have not changed in more than 20 years. In the marine transportation sector, Transport Canada acknowledges a risk that the current maritime liability limits and compensation regimes may not be sufficient to cover the cost of any major spill in Canadian waters. As a result, taxpayers may have to cover shortfalls and pay for environmental remediation.

- The Canadian Nuclear Safety Commission has obtained environmental financial assurances to cover the decommissioning costs of major nuclear sites. It is working to expand the requirement for such assurances to include licensees in the areas of medical and industrial applications and academic research.

The entities have responded. The entities agree with all of our recommendations. Their detailed responses follow the recommendations throughout the chapter.

Introduction

2.1 The resource sector is a significant part of the Canadian economy. In 2011, the extraction and processing of natural resources including oil and gas, and uranium, along with support activities to these sectors, contributed \$66 billion toward Canada's gross domestic product. The Responsible Resource Development plan announced by the government in 2012 stated that investment in resource development in Canada is expected to be \$650 billion over the next 10 years.

Decommission—To withdraw or dismantle equipment or facilities safely from service. Activities include removal and salvage of equipment and facilities and proper disposal of all wastes.

Source: Adapted from Natural Resources Canada's Mining Information Kit for Aboriginal Communities

Reclamation—The process of restoring a site as closely as possible to its original condition, according to regulatory requirements, when authorized activity ends. Reclamation involves developing and applying a planned approach that removes, destroys, contains, or otherwise reduces the impact of activities on a site. For example, this can involve treatment or removal of contaminated soil and water as well as new land cover and vegetation.

Source: Adapted from Natural Resources Canada's Mining Information Kit for Aboriginal Communities

2.2 Activities in the resource sector range from exploration and production to project **decommissioning**. Such activities are accompanied by various kinds and levels of environmental risk and, if not well managed, can result in a significant expense to the public purse. Environmental risks associated with such projects can include the release of toxic and hazardous substances; the impact of climate change on water and wastewater quality, flows, and containment controls; and effects on wildlife and fisheries.

2.3 The impact of such events may require significant financial commitments or investments to decommission and ensure **reclamation** of a site or facility. As noted in our 2012 Spring Report, Chapter 3, Federal Contaminated Sites and Their Impacts, the cost to clean up federal contaminated sites exceeded \$7 billion. Since we reported, estimated costs have increased to over \$8 billion. The majority of these costs relate to addressing abandoned mines in the North, decommissioning nuclear facilities, and dealing with a legacy of low-level radioactive waste.

2.4 Government departments and regulatory bodies have a variety of tools to manage these risks, including

- strategic environmental assessments,
- environmental assessments of proposed projects,
- laws and regulations to control the release of pollutants during operations, and
- regulations for the decommissioning and reclamation of sites at the end of their operating lives.

2.5 These tools also include environmental financial assurances and environmental liability limits (Exhibit 2.1). Environmental financial assurances are intended to protect public finances in case owners or operators become insolvent or fail to carry out their legal responsibilities related to the normal activities of their projects, including decommissioning and reclamation. Environmental financial

assurances are securities that the regulatory body or government department hold and have access to in order to cover potential damages, if necessary. Environmental liability limits may limit the financial exposure of a project proponent. While such tools are available to the government, the basic onus is on operators to meet the costs associated with decommissioning, reclamation, and any damages resulting from accidents.

Exhibit 2.1 Key terms used in this chapter

Environmental financial assurances—Financial securities or guarantees such as letters of credit, trust funds, guarantees, or insurance. These are provided by project proponents to federal regulatory authorities to ensure that proponents meet the terms and conditions of a regulatory approval, including the decommissioning and reclamation of property at the end of the project.

Source: Adapted from International Council on Mining and Metals, 2005.

Proponent—A person or organization that has submitted, or plans to submit, a resource development or energy production proposal.

Environmental liability limits—Amounts that can be set in law limiting the financial exposure of a project proponent should there be an accident. In some cases, there are no limits to liability when operators are proven at fault or negligent. Certain statutes can impose absolute liability on a proponent without proof of fault or negligence up to a prescribed amount. Proponents are commonly required to carry insurance up to the prescribed absolute liability limit amount.

Source: Adapted from Canadian Institute of Chartered Accountants and Public Accounts of Canada.

2.6 In addition to environmental risks from everyday operations, risks can also include major environmental accidents costing billions of dollars for compensation, containment, and cleanup. Although rare, events such as the Fukushima Daiichi nuclear power plant accident in Japan in 2011, the Deepwater Horizon platform spill in the Gulf of Mexico in 2010, and the 2002 Prestige oil tanker spill off the Spanish coast all illustrate that the costs of containing and addressing such catastrophic accidents are significant (Exhibit 2.2).

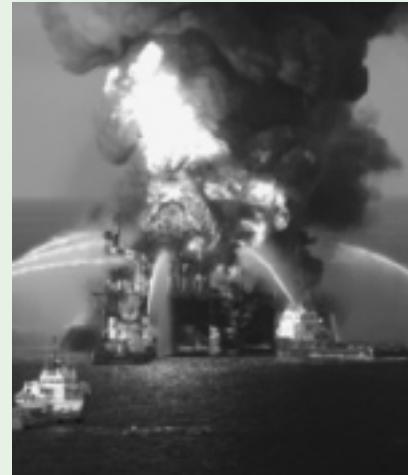
Roles and responsibilities

2.7 While resource development is primarily a responsibility of provincial governments, various federal entities have regulatory responsibilities for resource development and energy production within Canada's North, on federal lands, and in Canada's offshore areas. Federal entities are responsible for regulating all stages of the nuclear fuel cycle, from uranium mining and milling through to

decommissioning and radioactive waste management. These entities include the following:

- Natural Resources Canada is responsible for recommending liability limits for nuclear facilities subject to the *Nuclear Liability Act* as well as the absolute liability component for offshore oil and gas.
- The Canadian Nuclear Safety Commission regulates the use of nuclear energy and materials to protect the health, safety, and security of Canadians and the environment.
- Aboriginal Affairs and Northern Development Canada manages the resources, land, and environment of the North in places where federal responsibilities have not been transferred to territorial governments and Aboriginal peoples.

Exhibit 2.2 Examples of major resource disasters and their impact

Fukushima Daiichi nuclear power plant accident, Japan	Deepwater Horizon platform oil spill, Gulf of Mexico	Prestige oil tanker spill, Spanish coast
 <p>Photo: DigitalGlobe Inc.</p> <p>Year: 2011</p> <p>Impact: Earthquake and resulting tsunami flooded and damaged four reactors. There was a major release of radioactive material and displacement of 160,000 people.</p> <p>Estimated range of costs: \$15 billion to \$200 billion US dollars</p>	 <p>Photo: US Coast Guard</p> <p>Year: 2010</p> <p>Impact: Eleven people died and an estimated 4.9 million barrels of oil were spilled.</p> <p>Estimated costs: More than \$40 billion US dollars</p>	 <p>Photo: Associated Press</p> <p>Year: 2002</p> <p>Impact: An estimated 63,000 tonnes (462,000 barrels) of oil were spilled.</p> <p>Estimated costs: \$1.4 billion US dollars</p>

- Fisheries and Oceans Canada has the lead federal role in managing Canada's fisheries and safeguarding its waters.
- Transport Canada has administrative responsibility for dealing with the liability of ship owners and operators in relation to passengers, cargo, pollution, and property damage.

Previous audit work

2.8 In May 2012, we reported on federal contaminated sites and their impact. We found the federal government was responsible or had accepted responsibility for \$7.7 billion of environmental liabilities, with the majority of these related to resource development. In 2011, we reported on the transportation of dangerous products, looking at the activities of the National Energy Board's oversight of 71,000 kilometres of federally regulated oil and gas pipelines. The audit reported gaps in the Board's follow-up procedures for verifying whether operators have corrected deficiencies noted during monitoring and inspection. Also in 2011, we reported on enforcing the *Canadian Environmental Protection Act, 1999*. We found significant issues relating to Environment Canada's enforcement of the Act's associated regulations, including identifying risks and setting priorities. In 2010, we reported on oil spills from ships and found that there was no process in place to ensure that federal entities were ready to respond to an oil spill effectively.

2.9 In 2010, we also reported on sustaining development in the Northwest Territories and found that co-management boards were missing environmental information that could have been used in decisions relating to development proposals. The departments had not met their responsibilities to monitor the cumulative impact of development or various pollutants in the Northwest Territories, and significant departmental delays in providing agreed upon funding to First Nations hindered their participation in self-government negotiations.

Focus of the audit

2.10 We examined whether selected federal entities have established appropriate mechanisms to manage the financial implications of risks related to environmental damage. We looked at four sectors for which the federal government has responsibility:

- mining,
- nuclear facilities,

- offshore oil and gas, and
- marine transportation (ship spills).

2.11 We focused on determining whether selected entities had systems for obtaining and managing environmental financial assurances that would minimize the financial impact on the public purse when a resource project is closed, comes to the end of its operating life, or suffers an environmentally damaging event. We also looked to see if liability limits established for these sectors were reviewed on a regular basis. The following federal entities were included in our audit:

- Natural Resources Canada,
- The Canadian Nuclear Safety Commission,
- Aboriginal Affairs and Northern Development Canada,
- Fisheries and Oceans Canada, and
- Transport Canada.

2.12 Our audit work at Fisheries and Oceans Canada was conducted according to the terms of the Policy for the Management of Fish Habitat (hereinafter the Fish Habitat Policy), which requires compensation for damage or destruction of fish habitat. The *Jobs, Growth, and Long-term Prosperity Act* (Bill C-38), which received Royal Assent on 29 June 2012, made significant amendments to the *Fisheries Act*. These amendments include restricting the definition of fish habitat to focus only on the protection of fish that supports commercial, recreational, or Aboriginal fisheries. Some of the amendments to the *Fisheries Act*, which are expected to come into force in January 2013, require amendments to the current Fish Habitat Policy. The Department has stated that it has not yet fully determined the impact of the changes.

2.13 A separate audit has been completed of the two offshore petroleum boards and how they, in conjunction with other federal departments, manage environmental risks of offshore oil and gas activities (see Chapter 1 of this Report, Atlantic Offshore Oil and Gas Activities).

2.14 More details about the audit objective, scope, approach, and criteria are in **About the Audit** at the end of this chapter.

Observations and Recommendations

2.15 As part of our audit, we examined the policies and procedures of selected entities for establishing and managing environmental financial assurances. A system for control and accountability should exist in federal entities governing environmental financial assurances. Such a system would include ways to determine the cost of decommissioning and reclaiming project sites. This would ensure that appropriate funds are available to regulatory bodies and that they are sufficient throughout the life of a project. Developing and implementing such policies and procedures is important for managing risks, safeguarding the environment, and protecting the public purse.

2.16 Our detailed findings for each of the sectors reviewed are set out in separate sections.

Mining sector

Aboriginal Affairs and Northern Development Canada has obtained environmental financial assurances

2.17 A regulatory framework and the environmental financial assurances established according to regulations are used to manage environmental risks of mining activities. These financial assurances provide a contingency fund to cover the costs associated with mine decommissioning and reclamation. The extent of the reclamation that needs to be carried out will affect the cost of the work and the amount of financial assurance required. For instance, full ecological land reclamation would likely be significantly more expensive than simply containing mine waste in **tailings ponds** and would accordingly require higher financial assurances.

Tailings ponds—Large earthen structures above ground or in former mine pits used to contain mining wastes called tailings. Water bodies can also be used to store tailings. Tailings are a mixture of finely ground rock particles, water, and processing reagents that remain after ore processing. Tailings ponds contain effluents and potential heavy metal by-products of mining operations.

Source: Adapted from Natural Resources Canada fact sheet, the Canadian Association of Petroleum Producers, and the Mining Association of Canada

2.18 We looked to see if mechanisms (policies, procedures, and practices) were in place to identify, assess, and mitigate the financial impact on the federal government of environmental damage from the development, operation, and closure of mines north of the 60th parallel, where the federal government has either joint or exclusive jurisdictional responsibility. We also examined whether mechanisms were in place to minimize the financial impact on the government of unforeseen events (accidents) at these mines.

2.19 The Minerals and Metal Policy of Canada, introduced in 1996 and administered by Natural Resources Canada, requires the government to ensure that, as a condition for mine development on federal lands, mine operators develop comprehensive plans for the reclamation of disturbed areas. These plans are to include the provision of satisfactory financial assurances to cover costs of

“Polluter-pays principle”—A generally accepted principle according to which the polluter should bear the cost of measures to reduce pollution according to the extent of either the damage done to society or the exceeding of an acceptable level (standard) of pollution.

Source: United Nations, *Glossary of Environment Statistics*, 1997

reclamation and, where necessary, long-term maintenance. This policy endorses the concept of pollution prevention and recognizes the **“polluter-pays principle”** under which operators have the responsibility for environmental performance and for stewardship of minerals and metals.

2.20 The federal government is the landowner of more than 80 percent of the land in the Northwest Territories and Nunavut. Aboriginal Affairs and Northern Development Canada (AANDC) would become responsible for any environmental costs on federal lands that are not properly secured by financial assurances if a resource development operator does not or cannot honour its legal commitments to restore the environment, including reclamation of its site.

2.21 The legislation and land claim agreements that created the various land and water boards in the North gave these boards the authority to recommend, and approve in certain situations, the amount of financial assurances to be held in support of water licences and land-use permits for resource development activities licensed within their jurisdictions. The Minister of Aboriginal Affairs and Northern Development must approve most licences issued by the Boards. The financial assurances obtained for mines and other natural resource developments in northern Canada are to cover the costs of decommissioning and site reclamation. We found that AANDC had procedures in place for obtaining environmental financial assurances when a proponent for a development project seeks a licence or permit. The Department holds about \$500 million in securities to cover these costs.

2.22 We noted that, in an effort to ensure that financial security requirements are applied consistently, the Department developed a standardized model to calculate mine reclamation costs using standard costs. Reclaiming a site involves removing or stabilizing mine structures, tailings ponds, and drainage systems as well as disposing of waste rock and replanting or rebuilding disturbed land. The model stipulates that reclamation costs are based on independent third parties completing the reclamation work on the site. In addition to calculations provided by this model, the Department may consider other factors when setting the final security amount, such as the economic and financial stability of a proponent, past history of the proponent, and potential benefits to the region.

There are weaknesses in the Department's management of environmental financial assurances

2.23 Sound management of environmental financial assurances requires key information, such as the term of the operator's licence or permit, the required amount of financial security, the form of the security, and the security's expiry date. Such information is essential for monitoring the continuing adequacy of the environmental financial assurance in place. Without such information, the Department will not know if the financial securities held are sufficient to cover the full cost of decommissioning the facility and restoring the site.

2.24 We found that inventory records at AANDC did not include all information necessary for management to ensure that environmental financial assurances received for a project were sufficient for its level of risk. For example, inventory records showed financial securities by licence or permit number but not by project (such as a mine), making it difficult to ensure that the amount of a security was sufficient for activities throughout a project's duration. There was no indication of the reclamation costs that securities were supposed to cover, or whether a security that was expired had been returned or replaced. Such information is needed to monitor whether operators are adhering to terms and conditions of authorizations and whether the financial assurances the Department holds are still sufficient.

2.25 We also found that the Department does not compare, on a regular basis, whether the financial securities obtained during the life of the mine for each authorized licence are sufficient to meet the cost for reclamation of land and water. For example, 3 of the 11 mines in Nunavut had security shortfalls totalling almost \$11 million. A security shortfall is the difference between the reported value of the security held and total value of the security required for the proponent to continue to meet the terms and conditions of the licences for these mines. Regular assessments of securities are an important component of sound management, because they ensure that the securities held are sufficient to reclaim sites as the financial implications may vary over time.

2.26 Inspections are an important step in the process to ensure that financial assurances held are sufficient. Inspections are a condition for obtaining a licence or permit to ensure that their terms are being adhered to—for example, that fuel is being properly stored, tailings ponds are structurally sound, and hazardous wastes are being properly disposed of. We found that in 2011, over 70 percent of required site visits of all resource development projects (including mines) were

not conducted by the Department in the Northwest Territories. Departmental records indicate that members of the Department's staff raised concerns internally about the level of monitoring being done.

2.27 Legislation and regulations specify the type of security instruments that can be accepted. Departmental policies also require that the securities obtained must be cashable and maintain their value in the event of an operator's insolvency. In the case of one mine, the Department accepted \$17.6 million in promissory notes for reclamation costs. These promissory notes did not satisfy legislative and regulatory requirements, because they were not guaranteed by a bank in Canada. The Department was unable to provide us with evidence that the Minister considered these notes to be a satisfactory security. We have concerns about the continuing enforceability of this security.

2.28 The *Territorial Land Use Regulations* were developed in 1971 and limit securities in support of land-use permits to a maximum of \$100,000. This limit does not reflect current costs for reclaiming a site.

2.29 At the time we were completing our audit work, Aboriginal Affairs and Northern Development Canada was developing a policy to govern the manner in which it manages the securities it holds as environmental financial assurances.

2.30 We also examined whether there were provisions in place to minimize the financial impact on the government of unforeseen events (accidents) at mines north of the 60th parallel. We found that liability for the impact on human health and the environmental damage resulting from an accident is managed on the "polluter-pays principle"—the owner or operator is expected to cover the costs of all damages and reclaim the environment. While there is no requirement for the owner or operator to have insurance, legislation allows the Department to access securities it holds to address accidents. In such circumstances, an operator would be expected to fully replenish these funds. In the event that the funds on hand are not sufficient to restore a site on federal lands, there is a risk that the government would have to assume these financial implications.

2.31 Recommendation. Aboriginal Affairs and Northern Development Canada should carry out the required monitoring and inspection programs to ensure that proponents are adhering to the terms of their licences and permits and that the financial assurances obtained remain adequate. The Department should develop a comprehensive inventory system that provides consistent information

by project and by regulatory authority of all securities required and held to ensure that the securities continue to meet the expected reclamation costs.

Aboriginal Affairs and Northern Development Canada's response. Agreed. The Department will implement a risk assessment framework and risk management strategy for inspections, to optimize resources available for inspections, adjust securities as required to reduce the liability of the Department, and ensure that appropriate securities are maintained at all times.

Fisheries and Oceans Canada has obtained environmental financial assurances

2.32 As part of our audit, we reviewed practices and procedures established by Fisheries and Oceans Canada (DFO). According to the Department's Policy on the Management of Fish Habitat (hereinafter referred to as the Fish Habitat Policy), the Department may require compensation from a project proponent to offset damage or destruction of fish habitat caused by the project.

2.33 Under the *Fisheries Act*, the Minister of Fisheries and Oceans may authorize the harmful alteration, disruption, or destruction of fish habitat that may result from works or activities taking place in and around fish-bearing waters. Financial assurances may be obtained to ensure that the proponents fulfill their legal obligations under terms of the authorizations. These obligations are set out in a site-specific fish habitat compensation plan.

2.34 Under the *Fisheries Act* and the Fish Habitat Policy, the Department is not obliged to obtain financial assurances from proponents who must create compensating fish habitat under their departmental authorizations. When DFO decides to obtain a financial assurance, it generally requires that proponents provide letters of credit as security, because these are issued by financial institutions and are readily cashable. While the Department has established national guidance for its staff on how to obtain and manage these financial assurances, we noted that each regional office has its own system and provided limited information to the national headquarters.

There are weaknesses in the Department's management of environmental financial assurances

2.35 We noted that in 2008 the Department implemented a system—the Program Activity Tracking for Habitat (PATH)—to capture information on securities held. However, key information is not being captured in this database, such as information on securities obtained

by the Department prior to 2008, the estimated compensation costs, the value and type of security held, and the expiry date of these securities. According to the PATH database, DFO obtained approximately \$122 million in support of habitat compensation plans between November 2008 and August 2012. Since this figure does not include environmental financial assurances obtained prior to November 2008, DFO was not able to confirm the total dollar value of the securities it held, whether the securities were still valid, or if they fully covered the estimated costs of the compensation plans.

2.36 The *Jobs, Growth and Long-term Prosperity Act* (Bill C-38), which received Royal Assent on 29 June 2012, significantly amended the *Fisheries Act*. Some of these amendments, including those affecting the Fish Habitat Policy, are expected to come into effect only in January 2013. It is expected that at that time, the new fisheries protection provisions will come into effect, requiring a new policy to be put in place. Department officials told us that DFO has not yet fully determined the impact of these amendments coming into force or the impact of the policy changes. Once implemented, certain amendments will eliminate fish habitat protection for fish-bearing waters that do not directly support a commercial, recreational, or Aboriginal fishery.

2.37 The Department has not yet determined how many of the fish habitat compensation plans and supporting financial assurances it holds will no longer be required. In addition, it does not know how these amendments will affect the management of environmental financial assurances in the future.

2.38 Recommendation. Fisheries and Oceans Canada should determine the effects of program change on the environmental financial assurances it holds or is expecting to obtain. The Department should strengthen its monitoring and tracking of such assurances to provide consistent information on all securities required and held.

Fisheries and Oceans Canada's response. Agreed. The Department will complete a review of all authorizations issued pursuant to section 35(2) of the *Fisheries Act* for ongoing works, undertakings, or activities in order to determine if the authorization remains necessary and which conditions of the authorization (including financial securities) may remain relevant. Fisheries and Oceans Canada will also effect changes to the Program Activity Tracking for Habitat (PATH) system to enable the collection, consolidation, monitoring, and tracking of information relating to financial assurances required or held. Implementation date: 1 April 2014.

Nuclear facilities sector **Environmental financial assurances are in place for major nuclear facilities**

2.39 Under the *Nuclear Safety and Control Act*, the Canadian Nuclear Safety Commission (CNSC) may require that proponents provide a financial guarantee as a term or condition of the licence granted to them to operate facilities. We examined whether such guarantees were in place.

2.40 We found that the CNSC requires that major nuclear sites, including nuclear power plants, research reactors, and operating uranium mines and mills, have financial assurances in place intended to cover the decommissioning costs of their facilities. This requirement has resulted in financial guarantees for about 71 licences. The value of a financial guarantee is tied to the cost of decommissioning the site as outlined in the decommissioning plans submitted by the proponent and approved by the Commission. Approximately \$11 billion in letters of credit and trust funds have been provided by these proponents to cover the estimated cost of eventual decommissioning of the nuclear facilities or sites.

2.41 Under the terms of their licences, proponents are required to submit updated decommissioning plans and financial guarantees, generally every five years. Within the five-year period, operators of certain nuclear power plants report annually to the CNSC on the sufficiency and adequacy of the financial guarantee relative to the estimated decommissioning costs. These plans are reviewed by CNSC staff and must be approved by the Commission.

2.42 To date, the CNSC has not required financial guarantees from the operators of **prescribed equipment**. The Commission has issued approximately 2,500 licences to these operators. It began a process in March 2011 to establish a financial guarantee requirement for this group of licensees. Financial guarantees are being obtained to provide securities that CNSC can access, if necessary, to clean up contamination or environmental damage caused by a licensee. The target completion date is March 2013.

2.43 The *Nuclear Safety and Control Act*, along with the *General Nuclear Safety and Control Regulations*, provides the authority through which the CNSC obtains financial assurances. The Commission also has regulatory guides. We found that it had not developed internal operational processes for establishing and managing financial assurances. The Commission has indicated that it intends to create formal policies and operational guidance for managing financial assurances. These policies will include a requirement for a consolidated

Prescribed equipment—Includes equipment containing or using nuclear materials, for example, medical equipment used in radiation therapy, and diagnostic imaging and nuclear gauges used in industrial applications and academic research.

Source: Adapted from the Canadian Nuclear Safety Commission

inventory of all financial guarantees and corresponding liabilities. These measures are important, given the CNSC's plans to obtain financial assurances from the operators of prescribed equipment.

2.44 Recommendation. The Canadian Nuclear Safety Commission should formalize its internal practices and procedures for establishing and managing environmental financial assurances. These procedures should include guidance to ensure their consistent application and to ensure the development and maintenance of a comprehensive inventory of the financial assurances that are in place.

The Canadian Nuclear Safety Commission's response. Agreed. The Commission will formalize the practices and procedures for establishing and managing environmental financial assurances. The process is planned to be completed and implemented by 31 March 2013. CNSC management will monitor the process to ensure its proper implementation.

Canada's absolute liability limit for nuclear operators has not changed in 35 years and is much lower than those in most other countries

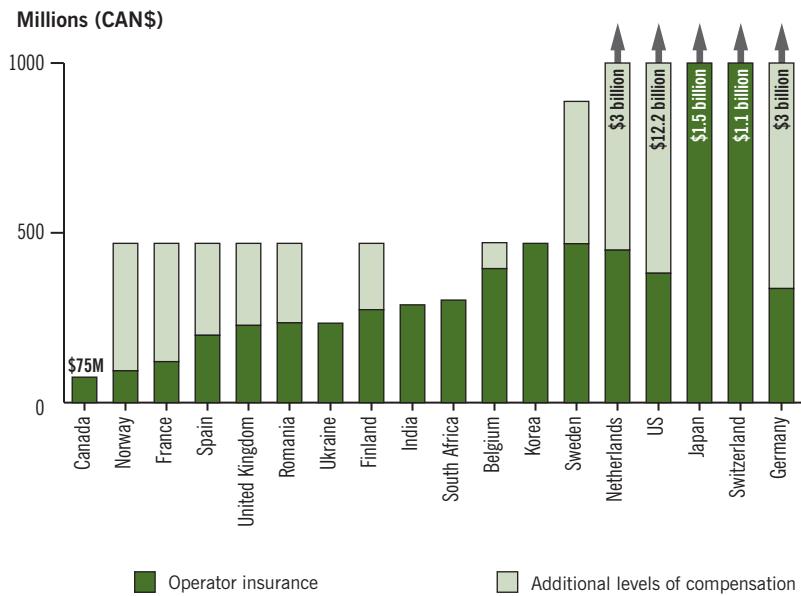
2.45 As part of our audit, we compared the absolute liability limit and corresponding insurance required from nuclear operators in Canada with the liability limits and compensation requirements in other countries. We noted that Natural Resources Canada had also undertaken such a comparison. An analysis of both comparisons indicated that other jurisdictions have significantly higher absolute liability limits and compensation requirements than Canada (Exhibit 2.3).

2.46 The *Nuclear Liability Act* establishes Canada's system for damages resulting from the unlikely event of a nuclear incident. Operators have absolute liability up to a maximum of \$75 million per event. Canadian operators obtain insurance from the Nuclear Insurance Association of Canada to cover their absolute liability. This insurance provides coverage for third-party compensation for personal injury and property damages. There is no provision for environmental damages or environmental restoration of **the commons**. In Japan, where operator liability is unlimited, nuclear power plant operators are now required to carry insurance in the amount of \$1.5 billion.

The commons—Resources that belong to or are shared by a community. This includes natural systems such as soil, forests, air, and water.

2.47 The nuclear liability limit in Canada remains unchanged since 1976, when the Act came into force. In June 2007, Bill C-63, the *Nuclear Liability and Compensation Act*, was introduced in Parliament. Bill C-63 did not proceed. Similar versions of the bill were introduced in subsequent Parliaments, but none have proceeded.

Exhibit 2.3 Canada's absolute nuclear liability limit and compensation amount is significantly lower than limits in most other countries



Note: In most cases, additional levels of compensation are made up of public funds. Only in the cases of the US, Japan, Switzerland, and Germany are they funded by operators.

Source: Adapted from Natural Resources Canada

2.48 The key changes proposed in the last bill introduced to amend the *Nuclear Liability Act* were intended to

- increase the amount of operator absolute liability from \$75 million to \$650 million;
- require that the operator liability limit be reviewed on a regular basis, and at least once every five years;
- expand the categories of compensable damage to address environmental damage, economic loss, and costs related to preventive measures; and
- expand the limitation period for submitting compensation claims for bodily injury to 30 years versus the current 10 years.

2.49 In May 2012, Natural Resources Canada issued a consultation paper to obtain written comments from the nuclear industry and the governments of nuclear power-generating provinces on issues related to the modernization of Canada's nuclear civil liability legislation. These issues included the sufficiency of the previously proposed \$650 million liability limit, taking into consideration recent developments, such as other jurisdictions increasing or planning to increase operator liability limits to about \$925 million or higher.

2.50 Recommendation. Natural Resources Canada should complete its review of liability limits for nuclear activities subject to the *Nuclear Liability Act* and, as necessary, recommend increases to them.

Natural Resources Canada's response. Agreed. The Department will complete its review of liability limits as a matter of priority and recommend changes as necessary.

Offshore oil and gas sector

Accord Acts—The *Canada–Newfoundland Atlantic Accord Implementation Act* and the *Canada–Nova Scotia Offshore Petroleum Resources Accord Implementation Act*. The associated provincial laws are the *Canada–Newfoundland and Labrador Atlantic Accord Implementation (Newfoundland and Labrador) Act* and the *Canada–Nova Scotia Offshore Petroleum Resources Accord Implementation (Nova Scotia) Act*.



Oil platform off Canada's east coast.

Photo: Greg Locke

Offshore oil and gas absolute liability limits are dated

2.51 As part of our audit, we examined the liability regime applicable to offshore oil and gas and how it compared to those of other countries. We looked to see whether there was an absolute liability component to the liability framework for damages to third parties, and, if established, whether it had been reviewed or updated since its inception.

2.52 Regulations pursuant to the *Canada Oil and Gas Operations Act* and the *Arctic Waters Pollution Prevention Act* establish for the Arctic offshore area a \$40 million absolute or “no fault” liability limit for actual loss and damage and reasonable clean-up costs. The **Accord Acts** establish for the Atlantic offshore oil and gas operations a \$30 million absolute liability limit for the same damages and costs. Proponents are required to provide financial securities to the respective regulators up to the amount of their “absolute liability.” If damages exceed the absolute liability limits, then all parties responsible for an oil or gas spill in Canada’s offshore areas are subject to unlimited liability if found to be at fault or negligent.

2.53 We noted that the absolute liability limits have not changed in more than 24 years and are low compared with the limits in other countries. As shown in Exhibit 2.4, the liability limit in the United States is US\$75 million (CAN\$74.9 million), the United Kingdom has increased its absolute liability limit to US\$250 million (CAN\$249.8 million) per incident, and Norway has an unlimited absolute liability limit. Greenland has a US\$1 billion (CAN\$999 million) insurance requirement for offshore oil exploration and unlimited absolute liability for oil drilling.

2.54 We noted that early in 2011, Natural Resources Canada began a review of the liability regime applicable to Canada’s offshore oil and gas activities. Various internal papers and studies have been prepared to assess, among other things, how adequate the limit is for the absolute liability component of the regime. This work considers possible changes to the absolute liability limit, principles, and policy implications, and the impact of those changes.

Exhibit 2.4 Canada's offshore oil and gas absolute liability regime compared with other countries

Notes: 1. Operators are liable for damages in excess of liability limits in situations such as proven negligence or fault.

2. Liability limits were converted from US dollars to Canadian dollars as of 30 March 2012.

2.55 Recommendation. Natural Resources Canada should complete its review of absolute liability limits for offshore oil and gas activities and recommend the revision of these limits, as necessary, to reflect the nature and significance of the potential risks.

Natural Resources Canada's response. Agreed. The Department will complete its review of the offshore oil and gas liability regime, including the regime's absolute liability component, as a matter of priority. The Department will work with its federal and provincial partners and recommend changes as necessary.

Marine transportation sector

Transport Canada has not updated its maritime transport risk assessment

2.56 Tanker oil spills have decreased over the last two decades and are rare as a result of improvements in safety standards, modern navigation equipment, and improved tanker construction practices such as double hulls. While rare, tanker spills can result in extensive long-term marine damage and costly clean-up efforts. For example, in 2002 the Prestige tanker spilled 63,200 tonnes of oil off the coast of Spain. Claims for damages were about \$1.4 billion.

2.57 The environmental impact and cost of a spill depends not only on how much oil is spilled, but also on where the spill takes place and what type of oil is spilled. A small amount of oil spilled along an environmentally sensitive coast can be more devastating than a larger spill far out at sea.

2.58 Transport Canada administers the *Marine Liability Act*, which governs civil liability for maritime claims in Canadian waters. The Act incorporates Canada's international commitments and provides for various levels of liability, depending on the type of oil that is causing pollution damage and the type of ship involved in an accident. Canada manages its exposure to the financial impact of marine spills through a four-tiered system that combines ship-owner insurance, domestic funds, and international conventions and protocols (Exhibit 2.5). We noted that this system provides for both third-party damages and environmental damages.

2.59 We looked to see if Transport Canada was monitoring and assessing the adequacy of maritime liability limits.

2.60 Canada is a signatory to several international conventions and protocols, one of which relates to ship-owner insurance, for pollution caused by oil transported by sea. As outlined in Exhibit 2.5, the compensation system for tanker oil features three International Maritime Organization conventions and protocols and one domestic fund. In addition to the international protocols, Canada has established its own Ship-source Oil Pollution Fund.

Exhibit 2.5 Canada is party to a four-tiered system for maritime liability for oil tanker spills to a maximum of \$1.3 billion per incident

Tier	Conventions and funds related to tanker oil spills	Total maximum compensation per incident as of 1 April 2012 (CAN\$ millions)
1	Ship-owner insurance. The International Convention on Civil Liability for Oil Pollution Damage—ship-owner liability limit supported by compulsory insurance.	\$138 (10.5%)
2	International Convention. The International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage, 1992—International Compensation Fund.	\$174 (13.3%)
3	International Protocol. The Supplementary Fund Protocol of 2003 to the 1992 International Oil Pollution Compensation Fund.	\$840 (64%)
4	Canada's Domestic Fund. Canada's domestic Ship-source Oil Pollution Fund, 1989 (SOPF).	\$160 (12.2%)
Total maximum liability limit per spill incident		\$1,312 (100%)

Source: 2011–12 annual reports of the Ship-source Oil Pollution Fund and International Oil Pollution Compensation Funds

2.61 We found that Transport Canada was active in monitoring and participating in the maritime liability and compensation system. For example, in April 2012, the Canadian delegation to the International Maritime Organization Legal Committee, 99th session, played a part in having liability limits for bunker oil increased by 52 percent—the first increase in 15 years.

2.62 As reported in Chapter 1 of our 2010 Fall Report, Oil Spills from Ships, Transport Canada reviews private sector certified response organizations to ensure that they have up-to-date management plans, conduct training, and have the equipment necessary to respond to ship-source oil spills up to 10,000 tonnes within 72 hours. The audit also found that while risks had been assessed, approaches were not consistent, and there were no formal processes for ensuring that risks would be reassessed on an ongoing basis. Since spill risk factors can change over time, the audit recommended that Transport Canada and the Canadian Coast Guard conduct a risk assessment related to ship-source oil spills covering Canada's three coasts.

2.63 We were informed by Transport Canada that planned risk assessments, which were to be completed in 2012, were deferred until 2013. Transport Canada data indicates that in 2010, about 91 million tonnes of petroleum products were either imported or shipped off Canada's east and west coasts. These shipments consisted of about 3,600 tanker movements in Canadian waters in 2010, about 600 of which were off the west coast and about 3,000 off the east coast.

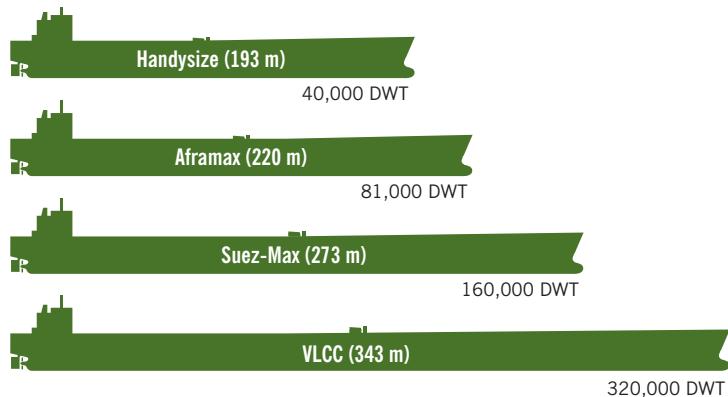
2.64 The maritime transportation risk environment continues to change. Natural Resources Canada is projecting that based on current proposals, there could be almost 1,800 more tanker movements on the west coast to handle increased liquid natural gas and crude oil exports and imports, representing a significant increase over current shipment levels. The proposed tankers to be used and their respective carrying capacities, in **deadweight tonnage (DWT)**, are shown in Exhibit 2.6. These include Suez-Max (120,000 to 200,000 DWT) and very large crude carriers (VLCC) (200,000 to 320,000 DWT). These tankers have a capacity significantly greater than the 10,000 tonne oil spill response capacity, within 72 hours, mandated by Transport Canada for ship-based oil spills in Canadian waters.

Deadweight tonnage (DWT)—The mass that a ship can carry, representing the cargo, fuel, water, and everything required for proper operation of the ship.

Source: Transport Canada

2.65 Transport Canada acknowledges there is a risk that present maritime liability limits and compensation regimes may not be sufficient in the wake of a major spill from a vessel in Canadian waters. Transport Canada informed us that it continues to monitor developments, including the government's projections regarding the increase in tanker traffic on Canada's west coast.

Exhibit 2.6 The tankers to be used in Canada are among the largest available



2.66 Recommendation. Transport Canada should carry out a comprehensive risk review of the maritime transportation liability and compensation system. The review should take into consideration the limited ship-based oil spill response capacities and the projected increase in tanker size and traffic transporting environmentally harmful substances in Canadian waters.

Transport Canada's response. Agreed. The Department will conduct a comprehensive review of the liability and compensation regime associated with marine transportation based on a risk assessment to be completed by fall 2013.

Conclusion

2.67 We concluded that the federal entities we examined have established appropriate systems to obtain financial securities that may be accessed by the government should a project proponent or operator become insolvent or fail to meet its obligations for protecting the environment under the terms of the authorizations provided to them. However, there are areas for improvement. Each of the organizations included in our audit was missing important elements for the ongoing management of environmental financial assurances. Examples included incomplete information on inventories of environmental financial assurances and the securities they held, a lack of documented policies and procedures, and a need for an updated assessment of risks.

2.68 Canada's absolute liability limits established for nuclear facilities and offshore oil and gas development have not been updated since their inception. As a result, taxpayers may be at increased risk of paying for environmental damage from a nuclear accident, or an oil spill due to oil and gas activity for which no party is found to be at fault or negligent. In both cases, the liability limits are lower than those of other countries.

About the Audit

All of the audit work in this chapter was conducted in accordance with the standards for assurance engagements set by The Canadian Institute of Chartered Accountants. While the Office adopts these standards as the minimum requirement for our audits, we also draw upon the standards and practices of other disciplines.

Objective

The objective of the audit was to determine whether federal entities have appropriate systems in place to manage the risks of financial impact of environmental damages. The focus was on determining whether selected entities had systems for obtaining and managing environmental financial assurances that would reflect risks and minimize cost, including whether liability limits were sufficient.

The word “systems” means the structures, policies, processes, procedures, mechanisms, and information for achieving control and accountability. By environmental damage we mean actual or potential damage to the environment caused by government or industrial activity, including adverse impact on land, water, and ecosystems.

Scope and approach

We examined the following entities in the audit:

- Natural Resources Canada,
- The Canadian Nuclear Safety Commission,
- Aboriginal Affairs and Northern Development Canada,
- Fisheries and Oceans Canada, and
- Transport Canada.

Criteria

Criteria	Sources
To determine whether federal entities have appropriate systems in place to manage the risks of financial impact of environmental damages, we used the following criteria:	
Federal entities have processes and procedures in place to identify, assess, and mitigate the financial impact of environmental damages.	<ul style="list-style-type: none"> • <i>Financial Administration Act</i> • <i>Canadian Environmental Assessment Act</i> • Framework for the Management of Risk, Treasury Board, 2010 • <i>Canadian Environmental Protection Act, 1999</i> • <i>Financial Administration Act</i>
Federal entities have risk management procedures in place, including initiation, preliminary analysis, risk estimation, risk evaluation, risk control and mitigation, and action and monitoring.	<ul style="list-style-type: none"> • <i>Canadian Environmental Assessment Act</i> • Framework for the Management of Risk, Treasury Board, 2010 • Risk Management: Guideline for Decision Makers, Canadian Standards Association, 2009 • Policy Framework for Financial Management, Treasury Board, 2010 • Enterprise Risk Management and Internal Control Frameworks, Committee of Sponsoring Organizations of the Treadway Commission

Management reviewed and accepted the suitability of the criteria used in the audit.

Period covered by the audit

The audit covered the period between 1 April 2007 and 31 March 2012. Audit work was completed on 31 August 2012.

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Appendix List of recommendations

The following is a list of recommendations found in Chapter 2. The number in front of the recommendation indicates the paragraph number where it appears in the Chapter. The numbers in parentheses indicate the paragraph numbers where the topic is discussed.

Recommendation	Response
<p>Mining sector</p> <p>2.31 Aboriginal Affairs and Northern Development Canada should carry out the required monitoring and inspection programs to ensure that proponents are adhering to the terms of their licences and permits and that the financial assurances obtained remain adequate. The Department should develop a comprehensive inventory system that provides consistent information by project and by regulatory authority of all securities required and held to ensure that the securities continue to meet the expected reclamation costs. (2.23–2.30)</p> <p>2.38 Fisheries and Oceans Canada should determine the effects of program change on the environmental financial assurances it holds or is expecting to obtain. The Department should strengthen its monitoring and tracking of such assurances to provide consistent information on all securities required and held. (2.35–2.37)</p>	<p>Aboriginal Affairs and Northern Development Canada's response. Agreed. The Department will implement a risk assessment framework and risk management strategy for inspections, to optimize resources available for inspections, adjust securities as required to reduce the liability of the Department, and ensure that appropriate securities are maintained at all times.</p> <p>Fisheries and Oceans Canada's response. Agreed. The Department will complete a review of all authorizations issued pursuant to section 35(2) of the <i>Fisheries Act</i> for ongoing works, undertakings, or activities in order to determine if the authorization remains necessary and which conditions of the authorization (including financial securities) may remain relevant. Fisheries and Oceans Canada will also effect changes to the Program Activity Tracking for Habitat (PATH) system to enable the collection, consolidation, monitoring, and tracking of information relating to financial assurances required or held. Implementation date: 1 April 2014.</p>

Recommendation	Response
<p>Nuclear facilities sector</p> <p>2.44 The Canadian Nuclear Safety Commission should formalize its internal practices and procedures for establishing and managing environmental financial assurances. These procedures should include guidance to ensure their consistent application and to ensure the development and maintenance of a comprehensive inventory of the financial assurances that are in place. (2.39–2.43)</p>	<p>The Canadian Nuclear Safety Commission's response. Agreed. The Commission will formalize the practices and procedures for establishing and managing environmental financial assurances. The process is planned to be completed and implemented by 31 March 2013. CNSC management will monitor the process to ensure its proper implementation.</p>
<p>2.50 Natural Resources Canada should complete its review of liability limits for nuclear activities subject to the <i>Nuclear Liability Act</i> and, as necessary, recommend increases to them. (2.45–2.49)</p>	<p>Natural Resources Canada's response. Agreed. The Department will complete its review of liability limits as a matter of priority and recommend changes as necessary.</p>
<p>Offshore oil and gas sector</p> <p>2.55 Natural Resources Canada should complete its review of absolute liability limits for offshore oil and gas activities and recommend the revision of these limits, as necessary, to reflect the nature and significance of the potential risks. (2.51–2.54)</p>	<p>Natural Resources Canada's response. Agreed. The Department will complete its review of the offshore oil and gas liability regime, including the regime's absolute liability component, as a matter of priority. The Department will work with its federal and provincial partners and recommend changes as necessary.</p>
<p>Marine transportation sector</p> <p>2.66 Transport Canada should carry out a comprehensive risk review of the maritime transportation liability and compensation system. The review should take into consideration the limited ship-based oil spill response capacities and the projected increase in tanker size and traffic transporting environmentally harmful substances in Canadian waters. (2.56–2.65)</p>	<p>Transport Canada's response. Agreed. The Department will conduct a comprehensive review of the liability and compensation regime associated with marine transportation based on a risk assessment to be completed by fall 2013.</p>

